

### Expeditions to Antarctica

12 SHRI KRISHAN LAL SHARMA : Will the PRIME MINISTER be pleased to state :

- (a) the number of expeditions sent to Antarctica till date;
- (b) their date of departure and return together with the number of persons sent in each expedition; and
- (c) the brief summary of the observations of each expedition?

THE MINISTER OF STATE OF THE MINISTRY OF PLANNING AND PROGRAMME IMPLEMENTATION AND MINISTER OF STATE OF THE MINISTRY OF SCIENCE AND TECHNOLOGY (SHRI YOGINDER K. ALAGH) : (a) Till date, fifteen expeditions have been sent to the continent of Antarctica. In addition, one expedition has been sent to the Weddell Sea and one to the Indian Ocean sector of the Antarctic Oceans.

(b) Please see enclosed Statement.

(c) The research work undertaken by these expeditions in Antarctica are in the following five major fields of polar sciences namely, (i) Earth Sciences and Glaciology; (ii) Atmospheric Sciences & Meteorology; (iii) Biology & Environment Sciences; (iv) Human Physiology & Medical Sciences; and (v) Communication & Engineering.

As most of the experiments are of continuing nature, the cumulative salient observations made during the course of these expeditions are summarised below :

- Regional and thematic geological mapping (Scale 1:50,000) covering an hitherto unmapped areas of 9600 sq. kms between 10-15 degree East in the Central Droning Maud Land has been completed.
- Reconnaissance geophysical exploration on the ice shelf and area between Schirmacher Oasis and Whol that mountains were carried out. Experimental air borne geophysical survey in and area 100 x 100 kms were also conducted which has revealed the gross subglacial features and the ice thickness in the area.
- Discovery of rock types in Schirmacher Oasis and Gruber massifs which closely resemble the metapelites and anorthosites from the Eastern Ghats of peninsular India.
- Experimental ice core drilling upto 100m has been achieved for carrying out paleo-environmental and paleo-climatic studies.
- Presence of Ozone hole over Antarctica has been established using continuous and synoptic ozone data profiling by various state-of-the-art equipments.
- Climatological data set over decadal scale has been archived which will be used for predictive weather modelling over Antarctica and Indian Ocean regions.
- Response of the auroral oval over Maitri to changing solar and geo-magnetic conditions have been monitored through fluxgate magnetometer studies and day-time optical auroral studies.
- Effect of temperature and wind over the Planetary Boundary Layer (PBL) have been charted using mono-static acoustic sounder. This equipment which was developed in Antarctica has been commercially applied to monitor environment pollution in India.
- Primary and secondary productivity cycles of the Fresh water lake ecosystem in the Schirmacher Oasis region have been quantified.
- Cyanobacterial and algal bio-diversity in terrestrial and lake water ecosystems have been catalogued.
- Species level taxonomic classification of microbial community in fresh water habitats have been established which have given insights to low temperature membrane mechanism for survival strategies in the cold.
- Initial assessment of Krill and other marine living resources in the Indian Ocean Sector of the Southern Oceans has been made.
- Methodologies and Protocol for monitoring Antarctic Fauna (birds and penguins) using air-borne surveys have been worked out for preparing a GIS database.
- Preliminary studies on performance and growth of certain plants under controlled conditions in Antarctic have been conducted under experiments on polar horticulture.
- Circadian rhythm studies and studies on cold acclimatisation have yielded insights which are being employed to enhance the physical and mental capabilities of personnel in cold and isolated conditions.
- Database on health and psychological parameters of wintering personnel in Antarctica is being developed for planned experiments on telemedicine.
- Prototypes of life support systems and structural engineering components developed and used in Antarctica have been deployed in colder regions of the country.
- Windows and limitations of long distance communication through various modes have

been successfully established through upgradation of communication links with the mainland by uplinking maitri with E-Mail and computer interfaced HF communication.

The Indian Navy and Air Force have gained professional expertise in snow ice navigation, helicopter operations and communication under adverse climatic conditions.

### STATEMENT

Expedition No.	Date of Departure	Date of Return	No. of Persons
I	06.12.81	21.02.82	21
II	01.12.82	21.03.83	28
III	03.12.83	29.02.84	81
IV	04.12.83	25.03.85	83
V	30.11.85	23.03.86	88
VI	26.11.86	22.03.87	90
VII	25.11.87	26.03.88	92
VIII	29.11.88	26.03.89	100
IX	30.11.89	27.03.90	82
X	27.11.90	25.03.91	100
XI	27.11.91	25.03.92	98
XII	05.12.92	22.03.93	56
XIII	08.12.93	-04.94	58
XIV	17.12.94	29.03.95	64
XV	07.12.95	19.03.95	47
Weddell Sea	04.12.89	08.03.90	21
Krill Expdn.	27.12.95	12.03.96	22

### Concession to Allottees

13. SHRI K.P. NAIDU : Will the PRIME MINISTER be pleased to state :

(a) whether DDA is giving 25% concession to allottees who pay in lumpsum for conversion of leasehold plots to freehold plots this year;

(b) the reason for this concession not given to those who paid earlier in 1993-94; and

(c) whether the Government propose to treat all allottees at par and refund the concession amount to allottees who paid in advance 2/3 years back?

THE MINISTER OF STATE IN THE MINISTRY OF URBAN AFFAIRS AND EMPLOYMENT AND MINISTER OF STATE IN THE MINISTRY OF PARLIAMENTARY AFFAIRS (DR. U. VENKATESWARLU) : (a) Remission in conversion fee by 25 % in the case of plots and 33-1/3% in respect of flats administered by DDA is available to original lessees/sub lessees or to persons

where transfers have taken place as per terms and conditions of the lease with prior approval of the lessor.

(b) and (c). The orders giving rebate for making lump sum payment were issued on 25.6.1996 and are applicable to pending as well as new cases. But in finalised cases, where conveyance deeds have already been executed, the benefit of these concessions cannot be allowed as the orders were not given retrospective effect.

### Symposium on Energy

14. SHRI SANAT KUMAR MANDAL : Will the PRIME MINISTER be pleased to state :

(a) whether a symposium on energy and power through clean technologies was held in India in early October last;

(b) if so, the various topics debated by the Indian and international experts during this Seminar; and

(c) the Governments' reaction to the various conclusions arrived at the above symposium?

THE MINISTER OF STATE IN THE MINISTRY OF POWER AND MINISTER OF STATE IN THE MINISTRY OF NON-CONVENTIONAL ENERGY SOURCES (DR. S. VENUGOPALACHARI) : (a) Yes, Sir. A Technical Workshop on Environmental Issues in the Power Sector was held on 26th October, 1996 at New Delhi.

(b) The various topics debated by the Indian and International experts during this workshop included: scenarios, policies, options, attributes, power system planning, financial models and environmental manual.

(c) The above workshop was organised with a view to review the progress made during the course of an ongoing study supported by the world Bank on Environmental issues in the power sector. This workshop emphasized use of cleaner technologies for power generation.

### Modification of Nuclear Power Plants

15. SHRI G.M. KUNTURKAR : Will the PRIME MINISTER be pleased to state :

(a) whether the Government's attention has been drawn towards a news items captioned "Modified N-project Awaits clearance" published in "The Hindustan Times" dated the 3rd October, 1996; and

(b) if so, the reaction of the Government thereto?

THE MINISTER OF STATE OF THE MINISTRY OF PLANNING AND PROGRAMME IMPLEMENTATION AND MINISTER OF STATE OF THE MINISTRY OF SCIENCE AND TECHNOLOGY (SHRI YOGINDER K. ALAGH) : (a) Yes, Sir.

(b) The imputations relating to the design of dome in the said news report are incorrect. The re-engineered